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Citation for published version:

Iosad, P, Ramsammy, M & Honeybone, P 2015, 'Preaspiration in North Argyll Gaelic and its contribution to prosodic structure', Paper presented at Forum for Research on the Languages of Scotland and Ulster, Ayr, United Kingdom, 12/08/15 - 14/08/15.

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Document Version:

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Preaspiration in North Argyll Gaelic and its contribution to prosodic structure

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13th August 2015

Outline of argument

- North Argyll & mainland preaspiration with [xp xt xk] is a real phenomenon
- North Argyll preaspiration allows us to establish neutralization of laryngeal contrast after a long vowel
- Preaspiration in Argyll varieties counts as a weight-bearing coda segment
- Phonological diversity within Gaelic may point to internal dynamics

1 North Argyll preaspiration

1.1 Preaspiration in Gaelic: basic facts

Laryngeal contrast in Gaelic

- Laryngeal contrasts in Gaelic (Ladefoged et al. 1998, Clayton 2010, Nance & Stuart-Smith 2013)
- ‘Fortis’ vs. ‘lenis’
- Prevocalic: [p^h t^h k^h] vs. [p t k]
- Postvocalic after a short vowel: [p^h t^h k^h] vs. [p t k]
- Postvocalic after a long vowel: [p^h t^h k^h] vs. [p t k], but with shorter preaspiration compared to short vowel context

Dialect variation

- Ní Chasaide & Ó Dochartaigh (1984), Ní Chasaide (1986), Ó Murchú (1985), Grant (2002), Bosch (2006), Clayton (2010)
- ‘Preaspiration’ [ʰp ʰt ʰk]: Lewis, mainland Ross-shire
- Partial ‘preaffrication’ [hp ht xk]: Outer Hebrides except Lewis, Skye, Islay, mainland Inverness-shire
- Across-the-board ‘preaffrication’/buccalization [xp xt xk]: N Argyll, Lochaber, W Perthshire, Banffshire

Available evidence

- Traditional descriptions
- SGDS
- More recently instrumental studies (Ní Chasaide 1986, Ladefoged et al. 1998, Clayton 2010, Nance & Stuart-Smith 2013), but these focus on Western Isles/Skye
- Obligatory buccalization is typologically rare (Silverman 2003, Clayton 2010) and may involve homorganic fricatives: Fox [fp st çc]
- Homorganic fricatives occasionally attested in descriptions, including SGDS: *tapaidh* [tʰaɸpɪ]

1.2 Acoustic study

Our study

- Acoustic study of preaspiration in North Argyll Gaelic
- 4 speakers Isle of Lismore, 4 speakers Sunart (Strontian)
- Fortis and lenis stops
 - Palatalization of stop
 - Preceding vowel quality
 - Vowel length
 - Also after liquids
- Also stimuli with underlying coda [x] (e. g. *each*, *loch*)
- Attempted to find unambiguous (heteromorphemic) clusters, but these are rare

Aims of study

- ☞ Verify the descriptions: is there oral frication? Is it dorsal or homorganic with following stop?
 - Palatalization of the preaspiration: does it match the palatalization of the stop or the frontness of the vowel? Or both/neither?
- ☞ What is the realization of preaspiration after a long vowel in these dialects?

Results at a glance

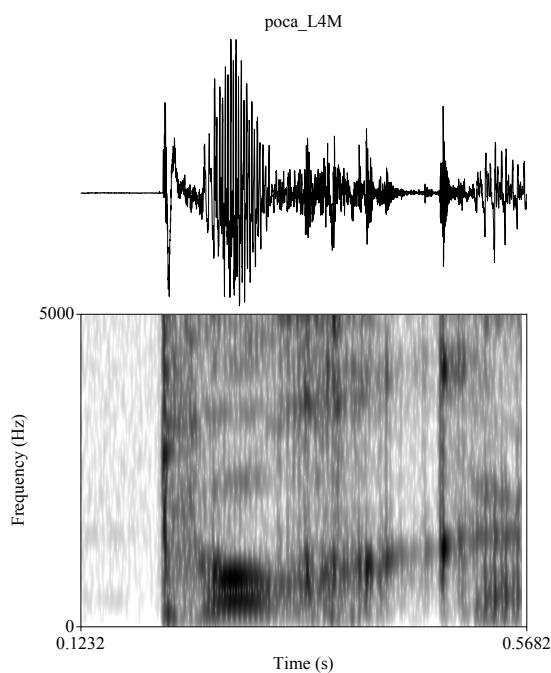
- Data analysis is ongoing
- Nature of frication: verified
 - Robustly dorsal frication across all places of stop
 - Velar or uvular
 - Intra-speaker variation in intensity (not understood yet)
- Preaspiration after long vowel: two possible outcomes
 - ‘Deaspiration’
 - Relexification with underlying fricative

2 Study results

2.1 Nature of frication

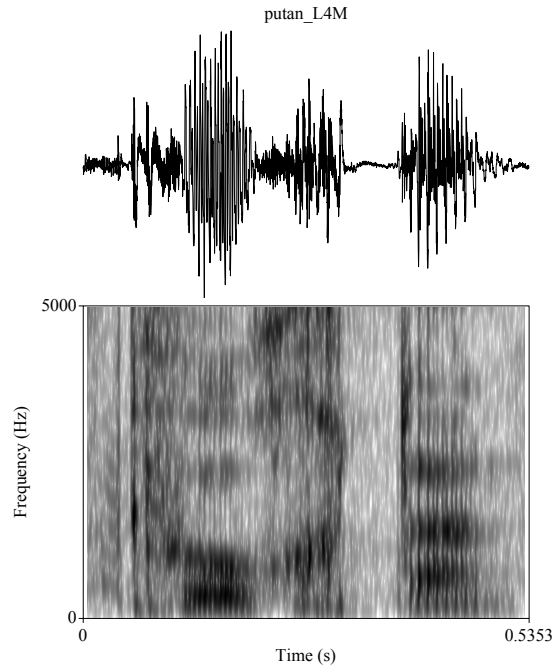
Velars

poca ‘pocket’ 🔊



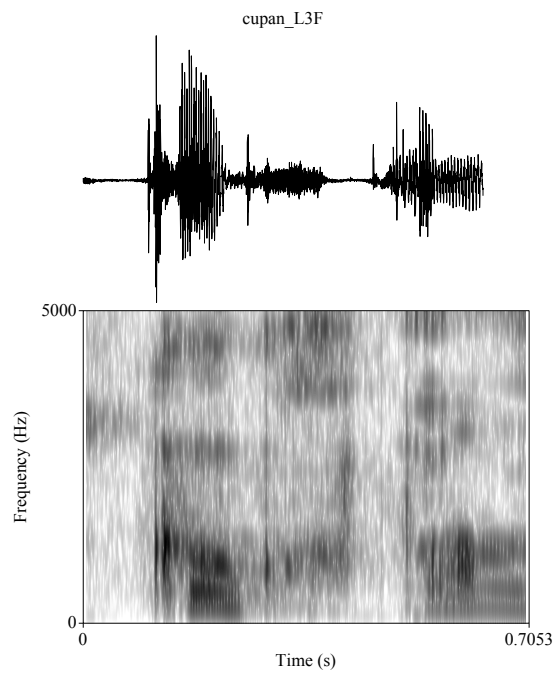
Coronals

putan ‘button’ 🔊



Labials

cupan 'cup' 🗣️



2.2 Preaspiration after long vowels


Existing descriptions

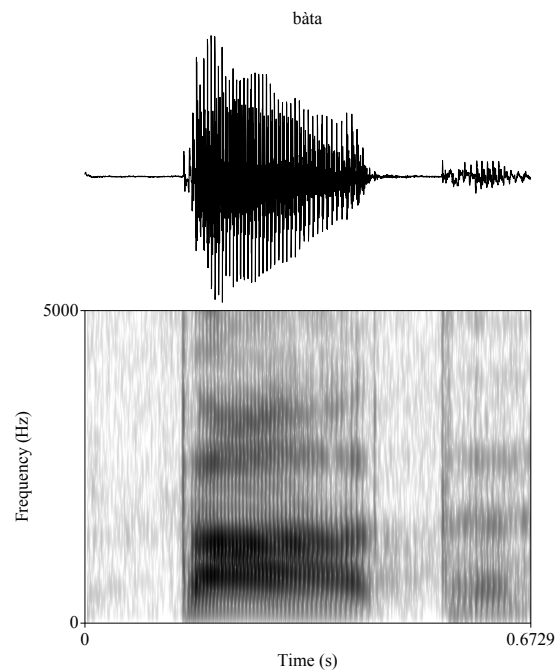
- Descriptions agree that preaspiration is appreciably shorter after long vowels and may even be absent ('deaspiration')
- However, descriptions (of other dialects) also agree that fortis stops in this position *are* (pre)aspirated, if perhaps in a variable manner
- Facilitated by the fact that (in relevant dialects) preaspiration after both short and long vowels is realized as glottal friction
- This is *not* the case for /xp xt xk/ dialects
 - Oral friction after short vowels
 - After long vowels (SGDS data): deaspiration (s. v. *bàta*, *mo bhàta*, *pàpa*) or robust friction (s.v. *ràcan*)

The crucial point

In /xp xt xk/ varieties, glottal friction before a stop does *not* have to indicate preaspiration

Results

- Broadly agree with SGDS: often no oral friction after a long vowel
- *bàta* 'boat' 



3 The phonology of preaspiration

3.1 Preaspiration and foot structure

The proposal

- ‘Deaspiration’ of fortis stops after a long vowel represents an instance of weakly unconditioned deletion of |spread glottis|: lenition (Honeybone 2012)
- The feature |spread glottis| in stops is licensed by the foot
- ☞ Corollary: preaspiration in North Argyll Gaelic contributes a mora
- ☞ Corollary: if this analysis extends to other varieties, ‘weaker’ preaspiration in a V:_C context is not the same phenomenon as in V_C

Some assumptions

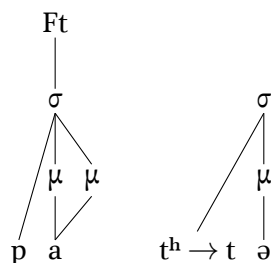
- Fortis stops in Gaelic are marked relative to lenis stops: we formalize this with a unary feature |spread glottis|
- Phonological processes can be ‘conditioned’ (triggered by their context) and ‘unconditioned’ (not triggered by a particular property of the context)
- *Weakly* unconditioned processes can be inhibited: this is *lenition* (Honeybone 2005, 2012)
 - Prosodic inhibition: position within the suprasegmental structure
 - Melodic inhibition: properties of other segments (e. g. geminate inalterability)
- Both kinds of inhibition found in Gaelic

Prosodic inhibition

- Contrast between |spread glottis| and \emptyset stops
- Intact foot-initially: [t^ha:v] *tàbh* vs. [tav] *damh*
- Intact after a short vowel: [pa^htə] *bata* vs. [fatə] *fada*
- Our claim: neutralized to \emptyset after a long vowel: [pa:tə] *bàta* (*[pa:^htə]) = [lʲu:tak] *lùdag* ‘little finger’
- Cf. Jones 2010 for a similar description
- Lenition: deletion of |spread glottis| because |spread glottis| is only licensed within the head foot

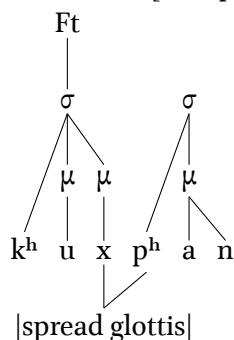
Prosodic inhibition

- (1) Foot structure of *bàta*



Segmental inhibition

(2) Structure of [k^huxpan] *cupan*



The analysis

- The structure of *cupan* shows a mix of segmental and prosodic inhibition
- Underlyingly |spread glottis| [p^h] undergoes fission to produce (in this dialect) [x]
- The |spread glottis| feature of [x] is licensed because it is in the head foot (prosodic inhibition)
- |spread glottis| is not delinked from [p^h] because of the double linkage (segmental inhibition)

Parallels

- Essentially the same situation in *linmæli* Icelandic (Jóhannes G. Jónsson 1994, Ringen 1999, Gunnar Ólafur Hansson 2003, Kristján Árnason 2011)
 - Contrast foot-initially: [t^ha:l] *tal* ‘speech’ vs. [ta:l] *dal* ‘valley’
 - Contrast foot-internally: [k^hɔp:ɪ] *kobbi* ‘young seal’ vs. [k^hɔhpɪ] *koppi* ‘chamber pot’
 - No contrast outside the head foot: [fa:ta] *fata* ‘barrel’, *[fa:t^ha]
 - Only real difference with Gaelic is weight-to-stress: *kobbi* has a geminate, Gaelic (apparently) does not (but cf. ‘fortis’/‘lenis’ in Ulster Irish per Wagner 1959)
- Danish (Basbøll 2005): [p^h t^h k^h] only foot-initially, otherwise [p t k] only (or further developments)
- English: Liverpool English stop lenition (Honeybone 2001), flapping in American & Ulster English (Honeybone 2012), [r]-deletion (Harris 2012) all foot-based

3.2 Foot structure in Gaelic

Preaspiration and morae

- The analysis given above requires that preaspiration project a mora
- This can be extended to other varieties of Gaelic
- South Argyll Gaelic: Islay (Holmer 1938), Jura (Jones 2000, 2006, 2010), Colonsay (Scouller 2015), potentially also Manx (Ó Maolalaigh 2014)

- Glottal stop insertion

- (3) a. [mɛʔ] *math* ‘good’
 b. [Raʔtan] *radan* ‘rat’

- Stress-to-weight (Smith 1999), or probably more precisely Main-to-Weight (McGarrrity 2003, Bye & de Lacy 2008)

- (4) a. ['sruʔ] *sruth* ‘stream’
 b. [sru-ʔfi:nəʏ] *sruth-lìonadh* ‘flood’
 c. ‘Cha bhi stad ann an lide nach eil fo phrìomh chudrom na h-abairt’ (Jones 2006, p. 198)

- Crucially, preaspiration in these varieties contributes a mora, making glottal stop insertion unnecessary

- (5) a. ['tʰahpi] *tapaidh* ‘clever’
 b. ['kʰohpan] *cupan* ‘cup’

- The stress-to-weight effect is reminiscent of Ó Baoill (1980): prominence of stressed syllable

3.3 Prosodic structure in non-preaspirating dialects

Is there neutralization in other dialects?

- We suggest we don’t know
- ‘Preaspiration’ noted after long vowels in sources
 - Gaelic lenis stops are actively devoiced, like in Icelandic or Danish, not partially voiced as in English or German
 - Thus, we expect some coarticulation between the vowels and the glottal spreading associated with the lenis stop
 - Breathy preaspiration before lenis stops even after short vowels (Nance & Stuart-Smith 2013)

☞ Just because there’s a [h] in the transcription doesn’t mean it’s the same thing

Potential diagnostics

- One potential diagnostic is duration: if [ht] behaves like [st], this may be evidence of a moraic segment
 - Duration of preaspiration itself
 - VOT *after* the stop
- We know there is diversity across dialects on this (Ní Chasaide 1986, Iosad 2015)

Coda: contact origins

- A reasonable hypothesis (Iosad 2015) is that the most archaic type of preaspiration (Lewis and Ulster Irish; see also Clayton 2010) is the one where preaspiration does *not* contribute a mora
- Phonologization: preaspiration goes from phonetic implementation to phonology by interacting with moraic structure
- Same internal development from Proto-Nordic to Icelandic (Pétur Helgason 2002)
- ☞ There is potentially no explanandum that requires exclusively Norse ⇒ Gaelic transfer

Summary

- North Argyll Gaelic does demonstrate the /xp xt xk/ type of preaspiration
- Dialects such as these are important because they allow us to disentangle phonological preaspiration and vowel-consonant coarticulation
- Argyll Gaelic shows good evidence for moraicity of preaspiration
- Foot structure is important in Gaelic phonology: not just stress
- There may be a foot-based lenition pattern in Gaelic phonology
- Further evidence that contact explanations are not necessary

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